



REQUEST FOR  
PROPOSALS:  
CNG LOCOMOTIVE  
REPOWER

February 25, 2016

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## Introduction

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The Indiana Harbor Belt Railroad (IHB) will source for a Potential Vendor (PV) to provide locomotive design and fabrication to support the repower of up to 21 SW1500 locomotives. The 21 SW1500 Locomotives are the initial transition of the IHB locomotive fleet to be fueled by compressed natural gas (CNG) and diesel fuel. In this Request for Proposals (RFP), the IHB will identify a capable PV who shares the vision of the IHB in providing a fleet of CNG/diesel fueled locomotives capable of providing consistent power and service using cleaner fuel sources, and lowering emissions to a negligible level.

The IHB locomotive project receives funding from the Chicago Metropolitan Agency for Planning (CMAP) and the United State Department of Transportation (USDOT), and is sponsored by the Illinois Environmental Protection Agency. The IHB gratefully acknowledges their support.

This RFP details requirements that must be met for a successful proposal. All PVs will expend effort to fully meet the requirements and conditions in this RFP. PVs are to explain in detail their fabrication processes, on-board fuel storage design, multi-engine control modules, electronic systems, projected routine maintenance, and life-cycle costs. The guidance given in this RFP will be considered as minimum information requests.

PVs are assumed to be thoroughly knowledgeable in all safety standards for locomotives as regulated by the United States Federal Railroad Administration (FRA). 49 CFR 229 will be incorporated into any contract with a PV, as will National Fire Protection Association Code 52 (NFPA 52) as it currently applies to off-road vehicles. AAR standards and best practices must also be followed wherever applicable. All PVs will be familiar with these documents. The PV will be chosen for its expertise in locomotive design and production, while meeting the special conditions of this RFP.

The PV will be required to work with OptiFuel Systems, LLC (OptiFuel) for design assistance regarding CNG architecture. All collaborative efforts between the PV and OptiFuel will be facilitated and overseen by the IHB.

The PV will be expected to interact regularly with the FRA, under the direction of the IHB, as this project moves forward and the locomotive designs are vetted. The intense interest in this project displayed by Federal, State and Local regulatory bodies, as well as IHB's ownership, requires that the PV work in concert with the IHB in approaching and interacting with external entities and regulators.

This RFP will outline performance minimums required by the IHB. The PV may deploy any available methods and technologies to achieve these requirements. All proposed designs, equipment, maintenance schedules, and life-cycle projections must be cognizant of the rigors and extreme conditions of the railroad environment.

Each PV will be allowed a maximum of two proposals. Each PV must creatively explore the methods, means, efficiency, and costs of providing a locomotive design and production plan that expresses the options clearly.

## Location of Services

Production of locomotives must be performed in the United States. The exact location proposed is solely at the discretion of the PV. All PVs will detail at length their capacity to produce the CNG locomotives, and include a detailed schedule for delivery to the IHB.

## General Requirements

The PV is required to accept all general requirements into its master pricing for each element as described herein. The IHB accepts only whole cost quotations and only loaded personnel rates.

## Overview of Locomotive Repower Project

The PV will repower up to 21 SW1500 switcher locomotives during a 48-60 month schedule. The PV will utilize their own design and production methods to achieve the goals set forth in this RFP. Work excluded from this repower are the locomotive trucks, traction motors and associated assemblies beneath the locomotive frame. Any electronic controls, or parts within the truck and traction motor assemblies that must be replaced as part of the new design and electronic controls are permissible.

The SW1500s will be repowered as twin-engine locomotives incorporating OptiFuel C18-OF engines. It is imperative that the PV provides a clear and successful track record that demonstrates their ability to design and produce multi-engine locomotives. Production numbers of multi-engine locomotives as well as direct references and contact information of current customers will be provided.

The IHB will provide a maximum of four locomotives for repower at any one time. At no time may more than four locomotives be off property for repower. The PV must clearly demonstrate the manufacturing capacity, engineering expertise, and financial commitment to repower the locomotives and complete delivery to the IHB before payment.

The PV will immediately be provided two SW1500s for repower. The initial two locomotives will be thoroughly tested before delivery to the IHB. The PV will work closely with the IHB during the testing process. These initial two must be placed successfully into IHB revenue service prior to the PV receiving additional locomotives for repower.

## Locomotive Design

The PV will assume control over all aspects of design and engineering for the locomotive repower in coordination with OptiFuel. OptiFuel will supply leadership for the engine design, and if requested by the PV guidance regarding on-board CNG storage. The PV will take leadership of all other design elements for repower.

The PV will further design a complete package of controls and necessary upgrades to the repowered locomotive. The PV is expected to perform the fabrication of the repowered locomotive, including the installation of an Electronic Control and Information System (ECIS).

The IHB requires a comprehensive and stable ECIS for the repowered locomotives. PV will design a solution that is effective and reliable. This solution will transmit wirelessly and in-real-time data concerning the C18-OF engines as well as the in-real-time status of the remaining systems of the locomotives.

The IHB has purchased the following list of key components that will be incorporated into the PV's design. No offer of substitution from the PV will be accepted – no exceptions.

1. 42 C18-OF dual fuel engines from OptiFuel. The C18-OF is based upon the Caterpillar C18 ACERT.
2. 231 Type 4 CNG cylinders from Hexagon Lincoln (HL) that will be mounted on the 21 locomotives.
3. 21 New York Air Brake (NYAB) CCB 26 systems along with 21 VV1000-T air compressors.

Design elements will include, but are not limited to:

1. Conformance to 49 CFR 229, FRA, USDOT, NFPA 52 and AAR regulations and best practices in all aspects of design, engineering and material specifications.
2. Replacement of all materials and systems as required, or refurbishment of existing systems as required.
3. ECIS to manage locomotive systems, operate in conjunction with the C18-OFs, and acquire system data for wireless transmission. The data includes the amount of CNG and diesel fuel used, system warnings and fault codes as prescribed by various system manufacturers, including Caterpillar. This data must be transmitted to the IHB's general office at 2721 161<sup>st</sup> Street, Hammond, Ind.
4. Multi-engine control module, as well as microprocessor for excitation, wheel slip, minimum proposed adhesion rates, and automatic engine start/stop control.
5. Incorporation of two C18-OFs, HL cylinders and NYAB equipment. PV is to consult with OptiFuel directly to determine design and placement of HL cylinders, or propose its own proprietary design.

### Requirements for Locomotive Design

1. Provide a detailed explanation of the design proposed for the IHB locomotive repower including conformance to the applicable regulations and best practices.
2. Provide a process flow chart addressing the incorporation of the two C18-OF engines in relation to the multi-engine control module to throttle/notch control to microprocessor(s) and excitation control of trucks/axles. Identify the critical componentry and principles of engineering utilized.
3. Provide drawings that demonstrate the new axle loading of the locomotive, and note if there is

a change of the on-center location of the axles. Define any changes that would affect the Plate rating of the locomotive.

4. Provide detail on all locomotive assemblies that will be replaced or refurbished. Provide specific explanation of locomotive assemblies that will not be replaced or refurbished as part of the repower.
5. Name all subcontractors and define their roles.
6. Name all equipment vendors and associated part(s) numbers.

## Locomotive Production

PV will demonstrate production capacity to successfully deliver to the IHB the 21 repowered SW1500s equipped with C18-OF engines, CNG cylinder storage, and ECIS as outlined in this RFP. Proposed production schedule per unit will be provided by the PV. The IHB reserves the option to directly purchase large cost component items for the repowered locomotives if doing so will lower the unit costs per locomotive.

### Requirements for the Locomotive Production

1. Description of production location(s) for the repower project. These descriptions will include reference to the owner of the rail lines connecting the facility. All facilities must be at minimum AAR M-1003 certified.
2. Maximum capacity of production facility.
3. Description of the labor force, and engineering staff designated to assist in the project.
4. Projected timeline of single locomotive repower.
5. Attest to the ability of your facility to produce and deliver two locomotives by November 2016.
6. Projected testing schedule of repowered locomotives.
7. Signed letter of commitment by an authorized official (e.g. CFO, investor group president) attesting to the PV's ability to finance the repower project without direct progress payments and assistance from the IHB. A schedule of progress payments may be considered by the IHB if a clear case of value to the IHB is demonstrated.

## Electronic Control and Information System (ECIS)

To satisfy the CMAP funding the IHB must receive near real time CNG fuel consumption and CNG on-board fuel data. All locomotives must be capable of wirelessly transmitting at a minimum the CNG data. The ability of the PV to capture and transmit other core mechanical and electrical components will be viewed favorably. The wireless transmissions must be carried along the existing Wi-Tronix system currently in place. The real time exchange of information will be between the repowered locomotives and the IHB General Office Building located at 2721 161<sup>st</sup> St Hammond, Ind.

The PV answering this RFP will make every effort to describe its designs and past successes in moving locomotive data across a platform in real time. The ability of the IHB to receive real time data is a primary qualification for selection.

### Requirements of Electronic Control and Information System (ECIS)

1. Provide a comprehensive, detailed technical diagram and drawings of the ECIS, including the wireless IHB interaction with the locomotive in near real time, under any weather conditions.
2. The ECIS must transmit in real-time the following minimum data:
  - a. Amount of CNG consumed;
  - b. Amount of CNG available on-board the locomotive;
  - c. Speed, throttle settings, and all other data available to the locomotive engineer;
  - d. Fault, error or system status codes as designated by locomotive systems manufacturers, including the C18-OF.
3. The ECIS must also be capable of overriding a locomotive shut down due to lack of CNG. This override function will be accessible remotely to IHB management.
4. The PV will design an ECIS integrated with the C18-OF.
5. All locomotives must be programmed to shut down the unit if CNG fuel is absent. OptiFuel is responsible for ensuring this condition, in coordination with the PV.

### On-board Fuel Storage

The IHB requires a minimum operating range of six days. All HL cylinders must be mounted onto the locomotive. A tender car will not be accepted – no exceptions. PV will verify with OptiFuel the minimum required diesel storage to achieve this goal. The PV will balance safety and efficiency in storing CNG cylinders on-board the locomotive. Reference to applicable standards such as NFPA 52 will be required. If selected, the PV must be prepared to defend its designs to FRA and any other regulatory body.

The IHB encourages all PVs to leverage the expertise of OptiFuel and HL to package all 11 cylinders. The PV may submit its own design for incorporation of the provided 11 HL cylinders. Or the PV may contact OptiFuel and HL to propose a pre-existing design.

OptiFuel may be contacted directly for all relevant inquiries. Please contact Scott Myers at 339-222-7575, or email [scott.myers@optifuelsystems.com](mailto:scott.myers@optifuelsystems.com).

HL may be contacted directly for all relevant inquiries. Please contact Dave Myers at 951-277-3533 or email [dave.myers@hexagonlincoln.com](mailto:dave.myers@hexagonlincoln.com).



## Requirements for Locomotive CNG On-board Storage

1. Provide a detailed description of the proposed on-board CNG fuel storage. Include the maximum storage planned and the maximum number of days for a duty cycle as proposed.
2. Provide an illustrated diagram of proposed on-board storage.
3. The PV will use HL Type 4 CNG cylinders that have been purchased by the IHB and will be delivered to the PV.
4. In conjunction with HL, provide a comprehensive maintenance manual for the proposed fuel cylinders.
5. Provide a detailed technical diagram of the on-board CNG fuel storage that has been approved by a Professional Engineer (PE).
6. Provide comprehensive diagrams and proof concerning the durability of the proposed fuel storage design, including its applicability to FRA standards. The PV will be prepared to defend its overall design, including on-board fuel storage, before the FRA and any other regulatory agency.

## Locomotive Maintenance, Intermediate and Complete Overhaul Program

PV will present a realistic projection of the ongoing maintenance and operating costs of the locomotives. Expected ongoing costs will at a minimum include comprehensive and complete maintenance intervals, applicable FRA mandated maintenance, intermediate overhauls, and complete overhaul schedules.

The PV will propose a plan of action and cost schedule for the care and maintenance of the repowered locomotives. The proposed estimates of maintenance costs and duties are a critical component for the selection of the PV. The PV will clearly enunciate 49 CFR 229 Subpart B – Inspections and Tests. The maintenance projections will include all specific additions for the repowered locomotive as related to the CNG cylinders and C18-OF.

The PV must be thorough in its examination and description of maintenance costs. Within the two allowed proposals, PVs will submit primary and alternate equipment options that create a positive cost benefit between purchase price and ongoing maintenance.

The PV must be thorough with regard to any component or subsystem of the locomotive that requires an intermediate or major overhaul and prescribe labor time, parts, materials, and lubricants required to complete the task. Based on the IHB's provided duty cycles (Appendix B), project a timeline and incorporate these overhaul projections into the comprehensive maintenance cycle.

## Requirements for Locomotive Maintenance Program

1. Provide detailed plans of maintenance, inspection and labor required by task for 49 CFR 229 Subpart B – Inspections and Tests.

- a. Incorporate into these plans any requirements for the CNG cylinders and C18-OF as prescribed by USDOT, NFPA 52, OptiFuel, and HL.
2. Complete a full life-cycle projection for the locomotive incorporating any required intermediate and full overhaul schedules.
3. Provide cost benefit equipment options that may minimize maintenance requirements.
4. Provide a comprehensive electronic maintenance manual, parts manual and troubleshooting guide.
5. Provide a comprehensive electronic operator's manual and troubleshooting guide.
6. All systems installed on the locomotive must be accompanied by prepared interactive training materials, both electronic and on paper, which will be held by the IHB.

## Repower Training Program

The PV will provide a comprehensive training program that includes diagnostic, maintenance and repair procedures. The PV must be available to train all shifts. The PV may utilize personnel of its choosing to perform the training.

Training is to begin prior to the delivery of the first repowered locomotive. Training materials must be inclusive of all systems on the locomotives. Accompanying classroom format material will also be required.

## Requirements for the Repower Training Program

1. Provide a comprehensive training program. This training will include classroom, electronic, and hands-on workshops.
2. Following delivery of the first locomotive to the IHB, the PV must position a competent employee(s) proficient in the design and maintenance of the locomotives on or near the IHB property. The IHB will provide office and work space to the employee of the PV at our maintenance facility located at the Gibson Yard in Hammond, Ind. If the PV chooses not to permanently station an employee on IHB property, his/her duty station must be within a four hour arrival time to the IHB maintenance facility in Hammond, Ind.
3. The PV will be responsible for the preparation and delivery of classroom and field training to all IHB maintenance personnel. Electronic and paper copies of all training materials must be provided to the IHB.

## Quality Assurance

The PV will provide to the IHB proof of design and engineering for the critical structures and systems. All mechanical, electrical and structural systems are required to have been vetted by a qualified third party. These assurances must be in the form of an Initial Quality Assessment (IQA) from the OEM, or if not available from a third party PE. Any component or system proprietary to the PV must have a third party PE stamp of approval.

All IQAs or PE vetted drawings and designs will be made available.

Quality Assurance will be expected of the following systems:

1. ECIS – fault monitoring systems, as well as wireless transmission
2. Microprocessor and related excitation control systems
3. Engine assembly and individual engine control systems
4. Multi-engine control module
5. Air brake and related air systems
6. Low voltage power supply and accessories
7. On-board CNG storage
8. Locomotive frame, car body, and any other structural components

## Quality Assurance Requirements

1. Acknowledgment by the PV that the specified quality assurance certificates and IQAs will be achieved and provided if the PV is selected.

## General Conditions

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1. All PVs are allowed a maximum of two proposals to propose solutions as called for in this RFP. All proposals must follow the same format as called for in this RFP, but must be marked as “Option A,” and “Option B.”
2. The PV will be required to sign a performance based contract. This contract will outline clearly the areas of direct responsibility held by the PV. In conjunction with this contract, the IHB at its discretion may require the PV to purchase a performance bond.

3. PV will at all times hold full responsibility and accountability for the design, production schedules, manufacture, and support for the locomotives. OptiFuel's C18-OF is excluded.
4. This project involves the use of USDOT's Congestion Mitigation and Air Quality Improvement Program (CMAQ) funding through CMAP. Pricing of the repowered locomotive must be completely transparent for all components and profit margins. There cannot be unknown or unexplained costs in the proposals. All proposed pricing will be kept in the strictest confidence by the IHB, and proposals for a fair profit return will be respected by the IHB.
5. PV may propose Firm Fixed Price (FFP), Guaranteed Maximum Price (GMP) or Cost Plus (CP).
6. All PVs will clearly state their warranty for parts and workmanship.
7. All PVs may propose an extended warranty for the maintenance and repair of the returned locomotives. This transaction will be evaluated separately.
8. All PVs will be required to provide a copy of their full design for their locomotives to the IHB for future reference.
9. If the PV is discharged for poor performance, or is otherwise excluded from the Project at the sole discretion of the IHB, it relinquishes all rights to any equipment previously delivered to their facility by the IHB.
10. PV will account for the costs of insurance and railroad safety training in its proposals.
11. The PV will be required to indemnify the IHB. Terms of indemnification will be settled during contract negotiation.
12. The PV will make available for inspection its production facilities, works in progress, and designs to any authorized Federal and/or the IHB official upon reasonable request.
13. The PV will provide production numbers for multi-engine locomotives, as well as direct references to customers of multi-engine locomotives.
14. The PV will be required to provide insurance levels as set forth:
  - a. Commercial General Liability insurance listing the IHB as a named insured in the amount of five million dollars (\$5,000,000).
  - b. Umbrella policy in the amount of ten million dollars (\$10,000,000).
  - c. Automobile insurance in the amount of two million dollars (\$2,000,000).
  - d. Workers compensation insurance for applicable personnel assigned to work at the IHB under the regulations as set by their appropriate employment jurisdiction.
15. All locomotive production must occur in the United States.

16. This Project is subject to the Buy American Act.

## Special Conditions

The PV will repower, refurbish, and return all locomotives with the following special conditions:

1. The current power blocks of the IHB locomotives tendered for repower, EMD Series 645, must have their current power block removed and rendered inoperable in conformance to 73 Federal Register 62374. Specifically:
  - a. The diesel prime mover engines of the locomotives being replaced/repowered shall be rendered permanently inoperable, as recommended by 73 Federal Register 62374. The PV shall provide to the IHB evidence and a signed, notarized certification that each of the maximum 21 diesel engine blocks have been destroyed, reutilized as scrap metal or otherwise rendered permanently non-functional. The evidence and certification are prerequisites for payment of the CMAP funds.
2. The IHB has purchased 42 C18-OF engines. The PV will receive the C18-OFs for installation into the locomotive. The schedule of C18-OFs transfers from OptiFuel to the PV will be supervised by the IHB.
3. The IHB has purchased 21 sets of the NYAB CCB 26 system and 21 VV1000-T air compressors. The PV will receive the NYAB equipment for installation into the locomotive. The schedule of component transfers from New York Air Brake to the PV will be supervised by the IHB.
4. The IHB has purchased 231 Type 4 CNG cylinders from HL that will be mounted on the 21 locomotives. All HL cylinders must be mounted onto the locomotive. A tender car will not be accepted – no exceptions. The schedule of transfer for CNG cylinders will be supervised by the IHB.
5. OptiFuel is responsible for ensuring the CNG fueling apparatus. The PV is responsible for ensuring delivery of diesel fuel to the C18-OFs.
6. All locomotives must have ergonomically correct seats and controls for the locomotive engineer as required by the IHB's labor agreements. The governing agreement concerning locomotive seats is available upon request to the IHB. Requests are to be made to [pm@ihbfuelproject.com](mailto:pm@ihbfuelproject.com).
7. The technical drawings returned to the IHB will exactly match the built locomotives delivered to the IHB.
8. All locomotives are subject to inspection by the IHB or any representative of the IHB at any time during production or testing.

## Outline of Proposals

Please adhere to the following outline in the preparation of your proposal. This outline is intended to guide the organization and flow of your proposal. Within the framework provided below, every effort will be extended to provide detail concerning your methodology and equipment to achieve the goals of this project. This outline follows closely to the sections of the RFP. **The PV is to pay close attention to meeting the minimal requirements as found in the relevant sections of the RFP.**

### **Introduction**

**Company Overview- Please be brief.**

### **Key Personnel**

- Personnel involved in this proposal and project effort, including subcontractors.

### **Locomotive Design**

Provide detail concerning all components to be used in the repower process. The PV is to describe all methodology employed, including proprietary systems. Provide all detail on this subtask that you may wish the IHB to have in order to form a judgment on your proposed plan.

- Answers to Minimum Requirements as outlined in the corresponding RFP Section

### **Locomotive Production**

Provide detail on production capacities of your firm. Provide sufficient information concerning skilled labor and engineering talent that will be used to handle this repower project.

- Answers to Minimum Requirements as outlined in the corresponding RFP Section

### **Electronic Control and Information System**

Provide extensive detail on the proposed electrical control systems to be used with the C18-OF. Provide extensive detail on the electronic system to transmit in-real-time data concerning the locomotive, including CNG storage and consumption.

- Answers to Minimum Requirements as outlined in the corresponding RFP section

### **On-board Storage**

Provide detail on the proposed means to hold CNG in storage on-board the locomotive. There must be a minimum of 11 Type 4 cylinders carried on board.

- Answers to Minimum Requirements as outlined in the corresponding RFP section.

## **Locomotive Maintenance Intermediate and Complete Overhaul Program**

Provide detailed plans of maintenance, inspection and labor required by task for 49 CFR 229 Subpart B – Inspections and Tests. Include maintenance, inspection and labor required for CNG cylinders and C18-OF.

- Answers to Minimum Requirements as outlined in the corresponding RFP section.

## **Repower Training Program**

Provide detail on the proposed training plan

- Answers to Minimum Requirements as outlined in the corresponding RFP section.

## **Quality Assurance and Certificates**

Provide statement of agreement to the proposed Quality Assurance measures as described

## **Price Sheet**

Using the provided template, provide your price to the IHB for the repower project in both unit and aggregate totals. The IHB reserves the option to directly purchase any major components separate from the PV. Provide prices for both purchasing scenarios that the PV is preparing.

*All PVs must be comprehensive, explicit, and transparent in their pricing structure. All pricing data will be held in strict confidence by the IHB.*

The IHB reserves the right to invite the PVs to provide oral presentations before making final selection. If oral presentations are requested, invitees will be notified within 10 days of the proposal submissions.

Within 45 days of the date enunciated under “Deadline of Proposals,” the IHB will announce a Selected Primary Vendor (SPV), and a Secondary Vendor (SV). The SPV shall then have 10 days to reach contractual agreement with the IHB, which may be extended by mutual agreement. If for any reason the SPV cannot reach agreement with the IHB, then the SV will be offered the opportunity to reach agreement.

## **Presentation of Proposals**

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Responses to this RFP are limited to 50 pages excluding exhibits, per proposal. All proposals must be submitted with a cover letter signed by a designated official verifying the validity and integrity of the proposal(s) contents.

The IHB will accept only a maximum of two proposals from each PV. No PV may submit greater than two proposals. The IHB will only accept the last two proposals as submitted to the email address detailed below.

## Deadline of Proposals

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All proposals must be submitted by **Wednesday March 16, 2016, at 5:00PM CDT**. Proposals must be emailed to [PM@ihbfuelproject.com](mailto:PM@ihbfuelproject.com). Emailed proposals must be in .pdf format. The time stamp on the email will serve as the submission time.

Proposals must be complete, with all attachments and exhibits. All proposals must be accompanied by a cover letter signed by a responsible company official attesting to the validity of all contents.

Printed copies of proposals will also be mailed to:

Michael Nicoletti  
Director of Mechanical Operations  
Indiana Harbor Belt Railroad  
2721 161<sup>st</sup> St  
Hammond, IN 46323

Printed copies will be delivered no later than Wednesday March 16, 2016. Printed copies of proposals may not take the place of the email .pdf submissions.



## Appendix A – Pricing Sheet Summary

The template below is intended for you to provide pricing detail to the IHB for the locomotives repowered. It is expected that the unit cost of locomotives repower will decrease over time as experience is gained. All PVs will provide additional detail on their pricing. **PVs are required to provide a comprehensive breakout of pricing for all locomotives. The detailed pricing will be attached to your proposal, and will be held in the strictest confidence by the IHB.**

### **PART A – Fabrication of Repowered Locomotives**

Pricing Grand Total for 21 Repowered Locomotives

1. The PV will add substantial detail to its pricing structure as an Exhibit to the proposal(s).
2. PV will provide a spreadsheet detailing every locomotive part and system that will be refurbished, procured or replaced on the repowered locomotive.

Sample Format for Locomotive Pricing Detail

<b>Part</b>	<b>Unit 1</b>	<b>Unit 2-21</b>
	<b>Expressed per Unit</b>	<b>Expressed per Unit</b>
Part 1	\$ 1	\$ 1
Part 2	\$ 1	\$ 1
<b>Total Parts (Receipts supplied to IHB)</b>	<b>\$ 2</b>	<b>\$ 2</b>
<b>Labor</b>		
Employee 1	\$ 1	\$ 1
Employee 2	\$ 1	\$ 1
<b>Subtotal</b>	<b>\$ 2</b>	<b>\$ 2</b>
<b>Total</b>	<b>\$ 10</b>	<b>\$ 10</b>

## Appendix B – IHB SW1500 Throttle Schedule

### **IHB SW1500 Throttle Schedules - 7/7/14**

#### **Flat and Hump Service - 21 Units**

Load	%	Hours
Idle	79.6%	157143
1	3.1%	6084.5
2	4.9%	9606.4
3	4.3%	8547.3
4	4.1%	8158.1
5	1.9%	3758.6
6	1.0%	2001.9
7	0.4%	740.6
8	0.7%	1453

#### **Flat Service - 18 Units**

Load	%	Hours
Idle	81.9%	110492
1	3.0%	4065.7
2	4.8%	6507.1
3	3.6%	4904.8
4	3.4%	4531.9
5	1.5%	1962.1
6	0.8%	1098
7	0.3%	464.4
8	0.7%	913.9

#### **Hump Service - 3 Units w/ 4 axle slug**

Load	%	Hours
Idle	74.6%	46651.4
1	3.2%	2018.8
2	5.0%	3099.3
3	5.8%	3642.5
4	5.8%	3626.2
5	2.9%	1796.5
6	1.4%	903.9
7	0.4%	276.2
8	0.9%	539.1